British Columbia
Broadband Association

October 26, 2020

Chantal Davis
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Spectrum Licensing Policy Branch
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Re: **BCBA's comments to Gazette Notice No. SLPB-002-20** — Consultation on the Technical and Policy Framework for the 3650-4200 MHz Band and Changes to the Frequency Allocation of the 3500-3650 MHz Band

Dear Madam,

Introduction

1 The BC Broadband Association ("BCBA") is a group of telecommunications service providers, equipment suppliers and infrastructure constructors in Western Canada. We represent regional and local internet service providers who operate in both rural and urban parts of British Columbia and Alberta.

2 No BCBA members contributing to this response are satellite operators. The BCBA is not responding to questions relating to FSS deployments.

3 BCBA is encouraged by the effort to bring more spectrum to rural operators through this proceeding, and to balance the use of the 3650-4200 MHz spectrum between fixed and mobile use.

4 The BCBA supports a third option, where ISED makes the spectrum from 3400-3450 MHz available for WBS users in addition to the spectrum from 3900-3980 MHz. WBS licensees can transition to the 3400-3450 MHz band within a reasonable timeframe, since most equipment available today is tuneable to this range. In this third option, ISED will make the 3900-3980 MHz band available on the same basis, so that WBS licensees can expand their service offerings when equipment and spectrum becomes widely available in this new band. This will enable rural consumers to benefit from 5G technologies.

5 Local operators who bring connectivity to under-served communities have consistently offered cutting-edge services well before MNOs invested in these communities. These operators are equipped to deploy 5G networks in rural Canada. If flexible use spectrum

is made available to small operators, these companies will invest into sustainable and future-ready communications networks across Canada.

6 Equipment that is capable of delivering 50/10 services exists today, and is deployed by several BCBA members, in the existing WBS band. Equipment is not yet widely available in the 3900-3980 MHz band, but rural operators will be able to transition to the 3400-3450 MHz band with less disruption to operators and consumers.

7 The US is preserving the 3650-3700 MHz for rural broadband operators, and so equipment will continue to be manufactured for rural carriers operating in this spectrum. ISED is making a significant departure from US-Canada harmonization by displacing rural operators from this band.

8 Option 2, as proposed by ISED, will displace existing users in the WBS band, providing only an additional 30 MHz of spectrum and leaving the smaller rural operators stranded with no clear path to affordable equipment. Under the proposed timeframe, and without more spectrum, this proposal risks causing widespread loss or degradation of service in rural communities, and a long-term reduction in investment by rural ISPs.

9 The moratorium announced in urban Tier 4 service areas is damaging to rural communities within these areas and to the operators who serve them. These areas encompass many small and rural communities. This decision precludes operators in these areas from investing in the expansion and upgrade of their networks. The BCBA strongly believes that is appropriate to apply a moratorium to the densely populated Tier 5 urban core service areas, but not to the entire surrounding Tier 4 service area.

10 Rural service providers have invested extensively in WBS systems, bringing broadband connectivity to homes and businesses in rural areas across Canada. In most of our members' service areas, customers have no other broadband connectivity option. The WBS band has been instrumental in bringing expanded connectivity to under-served areas, and continues to support investment into 50/10 Mbps connectivity speeds. Displacement from this band as proposed in Option 2 will disrupt connectivity in rural Canada.

11 As the BCBA has argued before, the single most effective measure to driving broadband connectivity is to make more spectrum available to the companies that will invest in rural Canada.

12 ISED and the CRTC and the Government of British Columbia continue to commit funds to bridging the digital divide in rural areas, however ISED's spectrum policy runs counter to

these initiatives. Spectrum continues to be concentrated in the hands of large national carriers, to be under-utilized in rural areas, and to be inaccessible to small local carriers. The WBS band is a rare exception to this trend, and the WBS model should be expanded significantly outside of Canada's dense urban cities.

13 In order for spectrum policy to support the goal of expanding rural connectivity, more spectrum must be offered in rural areas. This is the time to set a policy that distinguishes between rural and urban service areas. More spectrum for rural operators will make funding programs vastly more effective, without compromising the value of urban spectrum resources.

14 By increasing direct grant funding and spectrum supply to small carriers, Canada's rural communities will support sustainable business models for connectivity, rather than becoming dependent on government funding.

QUESTIONS

Q1 ISED is seeking comments on the timelines for the development of an equipment ecosystem using 5G technologies in the 3800 MHz band. In particular: a. the ecosystem maturity level and readiness of equipment under band classes n77 or n78 for the Canadian market b. the ability of existing or future base station radios to handle multiple technologies and band classes at the same time (i.e. whether all four band classes (B42, B43, n77 and n78) or a subset of these band classes are able to operate on the same base station radio) and how it may affect the adoption of 5G technologies in the 3800 MHz band

15 Currently, equipment in the proposed displacement band, 3900-3980 MHz, is not widely available. The equipment used by our members is not tunable to this band.

16 The Option 3 proposal to make 3400-3450 MHz available to WBS users will alleviate many issues associated with the timelines proposed. Equipment available today is generally tunable to 3400 MHz, and will allow rural operators to provide service to rural Canadians while manufacturers develop equipment for the 3900-3980 MHz band.

17 LTE systems consist of a baseband unit and a remote radio unit. Typically, the baseband unit can be used with a variety of remote radio units, and we anticipate that the baseband units that are deployed today could be re-used for deployments in the 3900-3980 MHz band.

18 The existing ecosystem of WBS user equipment is typically not tunable above 3800 MHz. Any funding assistance should include the necessary replacement of customer premises equipment. Most, but not all, user equipment that is deployed today is tunable from 3400-3800 MHz.

Q2 ISED is seeking comments on the potential linkages between the equipment ecosystems using 5G technologies in the 3500 MHz and 3800 MHz bands. In particular: a. whether contiguity between the 3500 MHz band and 3800 MHz band is preferred given that 3GPP specifications allows for non-contiguous carrier aggregation b. whether there are any technical or operational impediments (e.g. equipment limitations/challenges to support aggregated use of spectrum, or requirements for additional base station radios) that would be incurred if operators have a large frequency separation between frequency blocks in one or both bands, and at what point (i.e. how wide the frequency separation) such impediments would become significant c. whether the equipment ecosystem deployed for the 3500 MHz band will be able to operate in the 3800 MHz band, and whether this equipment could easily be extended to 3800 MHz after being deployed

19 Most radio equipment available today is not tunable across a band that is wider than roughly 400 MHz.

20 Contiguity across bands is preferred for an operator. However, with carrier aggregation becoming more widely available, frequency contiguity is become less important.

21 LTE systems consist of a baseband unit and a remote radio unit. Typically, the baseband unit can be used with a variety of remote radio units, and we anticipate that the baseband units that are deployed today could be re-used for deployments in the new band. Most radio systems deployed by our members are tunable from 3400-3800 MHz.

Q3 ISED is seeking comments on how the difference in technical rules between the U.S. and EU could impact Canada's ability to leverage the economies of scale from the global 3800 MHz ecosystem. In particular:

a. would the difference in technical rules (such as out-of-band-emission (OOBE) power limits) result in two distinct region-specific equipment ecosystems

b. which equipment ecosystem would be more suitable in the Canadian environment (noting that Canada has, for the most part, aligned with the U.S. on low- and high-band spectrum for 5G but in the mid-band, Canada is more aligned with the EU in the 3500 MHz band (3450-3650 MHz)) and specifically, whether Canada should generally align its technical rules with the U.S. or the EU in the 3800 MHz band

22 The BCBA supports any alignment of technical rules that allows Canadian companies to purchase from global suppliers. Whether ISED aligns with the US or EU, the alignment should be complete, so that separate equipment does not need to be manufactured for the Canadian market.

Q4 ISED is seeking comments on the proposal to add a primary mobile service, except aeronautical mobile, allocation in the 3700-4000 MHz band to the CTFA and the specific changes shown in annex B.

23 Fixed wireless service remains crucial to bringing connectivity to rural areas. The BCBA supports both mobile and fixed services as primary services in this band.

Q5 ISED is seeking comments on developing a flexible use licensing model for fixed and mobile services in the 3650-4000 MHz band.

24 The BCBA supports flexible use in this band.

Q13 ISED is seeking comments on:

a. establishing unpaired blocks of 10 MHz for the 3650-3700 MHz band

b. establishing unpaired blocks of 10 MHz for the 3700-3980 MHz band

25 The BCBA believes that unpaired blocks are appropriate for this band, since most of our members' deployments use TDD (time-division duplex) technology, which is suited to un-paired blocks.

26 The BCBA has no objection to establishing unpaired 10 MHz blocks, however we note that most rural fixed wireless deployments today use 20 MHz channels. Further, as

several interveners have noted in other proceedings, the deployment of 5G systems will benefit from 100 MHz channels.

Q14 Subsequent to changes to the spectrum utilization described in section 7 and recognizing the need to change the current WBS licensing model, ISED is seeking comments on its proposal to displace the existing WBS licensees and designate 80 MHz of spectrum available for the development of a new shared licensing process in the 3900-3980 MHz band as described in Option 2. Specifically, ISED is seeking comments on: a. the amount of spectrum proposed (80 MHz) under a shared spectrum licensing process b. whether there should be a provision that allows certain users (e.g. existing WBS licensees) priority licensing (e.g. an initial application window before accepting applications from others)

27 The BCBA supports a third option, where ISED makes the spectrum from 3400-3450 MHz available for WBS users in addition to the spectrum from 3900-3980 MHz. WBS licensees can transition to the 3400-3450 MHz band within a reasonable timeframe, since most equipment available today is tunable to this range. In this third option, ISED will make the 3900-3980 MHz band available on the same basis, so that WBS licensees can expand their service offerings when equipment and spectrum becomes widely available in this new band.

28 BCBA members are concerned about the proposed displacement of Option 2. The time and resources required to transition our networks may prove insurmountable for some operators. This will leave rural Canadians with severely restricted and degraded connectivity options.

29 Further, the proposal of Option 2, with only 80 MHz of spectrum available, does not provide a clear path for ongoing network expansion, enhancement, and upgrades to 5G systems that require 100 MHz for their full benefits to be delivered.

30 Our members would have an incentive to invest the necessary time and resources to transition, and indeed upgrade our networks if over 100 MHz of spectrum were made available. With two new WBS bands as proposed (3400-3450 and 3900-3980), our members could build 5G fixed networks that will support the next generation of consumer needs.

31 The BCBA members strongly support priority licensing for existing WBS licensees.

Q15 Given the proposal to implement Option 2, ISED is seeking information on potential costs such as upgrading equipment, which may be incurred by WISPs that are displaced from 3650-3700 MHz to provide services using the 3900-3980 MHz band.

32 The costs of re-building networks are, of course, significant. The new network must be built in parallel with the old network, in order to enable a smooth transition. This will require significant upgrades to many access point sites. Many of these upgrades must be negotiated with the tower site owner, and these negotiations are time-consuming.

33 In order to relocate to the 3900-3980 MHz band, all customer equipment will also need to be replaced, and most of these replacements require that a technician go to the customer location to re-install the subscriber unit. This is a time-consuming and costly process.

34 Most federal funding programs consider all costs associated with customer premises equipment to be in-eligible. In the case of fixed wireless networks, customer equipment is a significant cost of a network. To support a network replacement, the cost of replacing all customer equipment must be funded in order to make this transition feasible.

35 Finally, funding programs administered by the CRTC and by ISED have a high barrier to participation. Application and reporting requirements are stringent, and many small operators are discouraged from participating. In order to support rural connectivity, funding programs should be designed so that small operators can obtain funding and build networks in under-served communities.

Q16 Based on the proposal to implement Option 2, ISED is seeking comments on the proposed displacement deadlines, with WBS operations in urban areas being displaced by December 2023 and all others by December 2025. Respondents are invited to propose other protection and displacement options for consideration, provided they include a strong rationale.

36 If ISED chooses to proceed with the proposed third option, then operators will have 50 MHz of spectrum from 3400-3450 MHz available right away, and can begin their transition process immediately. Displacement by 2025 will be feasible for most operators.

37 Telesat has proposed that they will vacate the 3900-3980 MHz band in 2025. It should be obvious that operators, therefore, be able to complete a transition to this band by December 2023 (urban) or December 2025 (rural).

38 The transition schedule will be particularly challenging in areas where construction is impractical in winter months (i.e. northern and mountaintop sites). Most operators will require at least two full summer seasons to complete a network transition.

39 While operators may be able to transition some portions of their networks relatively quickly, other network portions will require more time. We propose that, beyond Tier-5 urban core areas, displacement be required on an as-needed basis, and only after five years from the date that the new band is available for licensing.

Q17 ISED is seeking comments on the Tier 4 service areas that would be considered urban as defined above and as listed in annex D.

40 While the Tier-4 service areas listed in Annex D indeed contain urban areas, these areas also include many small and underserved communities. The dense urban areas constitute a very small proportion of these service areas. The use of Tier 4 service areas condemns these communities to significant disruption, ongoing under-investment and service degradation.

41 With this moratorium, operators who have invested into serving these communities see their investments stranded, and are unable to expand or upgrade their networks while consumer demands continue to grow.

42 The use of Tier 5 service areas to define urban areas is more appropriate. All three urban Tier-4 areas in BC (Kelowna, Victoria, and Vancouver) include extensive areas where our members offer broadband services to otherwise un-served rural communities. These communities deserve the opportunity to benefit from investment by their local service provider.

Q18 ISED is seeking comments on whether the moratorium should be extended to include all Tier 4 service areas.

43 A moratorium is not required to cause a significant reduction in investment in the WBS band. The business uncertainty caused by this consultation will discourage investment by small operators.

44 A moratorium will prevent operators from carrying out necessary upgrades and repairs to maintain service levels during the transition period.

The current urban moratorium should be limited to urban Tier-5 areas, in order to permit rural network operators to continue to support broadband connectivity in small communities within Tier-4 areas.

Q19 ISED is seeking preliminary comments on the future spectrum licensing process for 3900-3980 MHz, including the following: a. what type of applications are envisioned for this spectrum b. what type of shared licensing process ISED should consider (e.g. database approach, licensee to licensee coordination) c. what additional measures ISED should consider employing to manage access to the band in high demand areas, such as major metropolitan centres d. what technical restrictions should be considered (e.g. technical rules similar to adjacent 3500 MHz flexible use band with reduced power levels, a guard band between new flexible use systems below 3900 MHz, shared use above 3900 MHz, etc.) e. what type of eligibility criteria, if any, should be established

45 With access to a total of 130 MHz of spectrum in the 3400-3450 and 3900-3980 MHz bands, the BCBA anticipates that rural carriers will invest into building 5G networks that will support fixed high-speed broadband connectivity, and possibly some innovative mobile connectivity solutions, including IoT and private LTE or 5G networks for industrial users.

46 In the rural areas where our members operate, the current licensing system has worked very well for our members. We have encountered little interference, and this has been managed effectively through co-ordination between carriers.

47 If the current licensing system is used, it would be helpful for ISED to publish a guideline outlining the appropriate procedure to follow when implementing a new WBS station. The guideline should include steps such as identifying stations within 80 km, notifying and conducting co-ordination with these other licensees, and uploading the new station data as required.

48 The BCBA remains hopeful that the Canadian market will see a successful database solution that better enables frequency co-ordination. However, given the lack of success thus far with database implementation, the BCBA cannot support a database-based frequency co-ordination system.

49 Our members do not typically operate WBS systems in urban areas, and we have no comment on additional measures that should be implemented in these areas.

50 Co-ordination between users of the WBS band is more effective when carriers are using the same technology, and their systems can be synchronized. Technical rules that support standardization of systems will facilitate more efficient use of the band.

51 Eligibility for the new WBS band should be the same as current eligibility requirements for the WBS band.

52 Technical rules for the new WBS band should permit transmit power equivalent to those in adjacent bands. The ability to use higher-power radios is critical to delivering 50/10 service levels in rural communities.

Q43 ISED is seeking comments on the proposal to rely on technical limits and coordination procedures rather than mandate specific technology solutions (e.g. TDD synchronization between systems) to address interference issues between TDD flexible use systems in the 3650-3980 MHz band.

53 Co-ordination between users of the WBS band is more effective when carriers are using the same technology, and their systems can be synchronized. Technical rules that support standardization of systems will facilitate more efficient use of the band.

54 Technical rules for the new WBS band should permit transmit power equivalent to those in adjacent bands. The ability to use higher-power radios is critical to delivering 50/10 service levels in rural communities.

Q44 ISED is seeking comments on whether any additional measures should be taken to limit potential interference issues between flexible use systems in the 3650-3980 MHz band.

55 ISED may want to consider incentives for users of the band to engage in co-ordination with other users. Currently, if an operator causing interference does not wish to engage in co-ordination, there is no path for an operator suffering interference to encourage co-ordination. An ombudsperson would provide a forum for mandating engagement with other operators.

Q45 ISED is seeking comments on whether specific technical measures should be adopted to address potential interference issues between flexible use systems and WBS systems until the displacement deadline.

a. For co-channel flexible use and WBS operations in the 3650-3700 MHz band, what specific measures may be needed to protect WBS? For example, should new flexible use stations be required to coordinate with WBS stations within a specified distance prior to deployment? Alternatively, should a technical parameter such as a power flux density (pfd) trigger for coordination measured at the WBS receive antenna be adopted? Are there other more appropriate measures that ISED should consider? Should multiple measures, such as a combination of distance and pfd trigger for coordination, be adopted? How would these requirements impact the deployment of new flexible use stations?

b. For adjacent band flexible use systems, is there a need to adopt any additional measures, beyond what is currently specified in RSS-192 and SRSP-520, to further address coexistence between these flexible use and WBS systems? If so, what should they be? How many flexible use frequency blocks (or MHz) immediately adjacent to the 3650-3700MHz band could potentially affect WBS systems? How would these requirements impact the deployment of flexible use stations?

56 During the transition period, existing and registered WBS stations should have a protected status. It would be appropriate for flexible use stations within 80 km to co-ordinate with WBS stations.

57 By implementing similar technical standards as those used in adjacent bands, co-ordination and synchronization between operators will be feasible.

Q52 ISED is seeking comments on the use of an auction as the licensing process for the flexible use spectrum that would be considered as the 3800 MHz band, noting a separate consultation process would be issued, if required, to determine the licensing framework for the range 3900-3980 MHz.

58 The BCBA supports the use of an auction process, similar to the process used for the upcoming 3500 MHz auction.

59 In order to support continued investment into rural connectivity, spectrum must be available to small local carriers. An auction process that provides access to small participants is crucial to building a more competitive, sustainable, and equitable future for the communications industry.

60 Spectrum caps and set-asides are necessary to ensure that Canadian consumers have access to competitive prices. Smaller service areas are necessary to ensure that rural Canadians have access to urban-grade connectivity services from small, local carriers.

61 A spectrum cap of 150 MHz should extend from 3450 to 4200 MHz, excluding shared licences.

62 If ISED uses the same licensing mechanism for the 3900-3980 MHz band that has been used for the 3650-3700 MHz band, then no consultation should be required. If ISED proposes to use a different licensing process, then a consultation should be conducted quickly in order to provide WBS operators with business certainty.

Q53 ISED is seeking general comments on the proposal submitted by Telesat found in annex H, including whether such an approach would be in the best interest of Canadians and more specifically, whether it would result in the faster deployment of 5G services in the affected frequencies; more efficient use of spectrum and what the implications of this repurposing plan would be for other users of the band.

63 By awarding 200 MHz of national flexible-use spectrum to Telesat, ISED is conferring a significant financial benefit on Telesat. Whereas ISED has historically attempted to allocate spectrum with some consideration of the social benefits of this public resource, Telesat will not be bound to do so.

64 The BCBA is concerned that the Telesat proposal will result in all 200 MHz of the Telesat-retained spectrum being held by the three large national mobile service providers (NMSPs). These companies have access to vastly more capital funding than any other carrier, and have a strong incentive to foreclose on any available spectrum.

65 If Telesat's proposal were adopted, it would be necessary to ensure that spectrum caps and set-asides enable small carriers to obtain meaningful quantities of spectrum through the auction process.

66 Further, the timeframe proposed by Telesat is inconsistent with the timeframe proposed for the transition of existing WBS licensees. Existing licensees will require one or two years with both the old and new bands available in order to undertake a transition that does not severely disrupt consumer services. The availability of 3400-3450 MHz will alleviate this concern to some extent.

Q54 ISED is seeking comments on whether the Telesat proposal meets ISED's policy objectives outlined in section 3, including:

a. supporting rural/remote connectivity

b. promoting competition in mobile services

c. making more mid-band spectrum available to support 5G services

67 Telesat's proposal does not meet ISED's objectives. Telesat's proposal will result in the three NMSPs holding all of Telesat's retained 200 MHz, possibly before ISED has completed the auction for the remainder of the spectrum.

68 In this scenario, small carriers and competitors will have reduced and delayed access to this spectrum.

69 If Telesat's proposal were adopted, it would be necessary to ensure that spectrum caps and set-asides enable small carriers to obtain meaningful quantities of spectrum through the auction process.

70 If Telesat's proposal were adopted, the Telesat flexible use licences should not be available for use until after the auction for the remainder of the spectrum.

Q56 If ISED were to implement the Telesat proposal, ISED would need to consider the licensing framework for the 3700-3900 MHz band. Thus, ISED is seeking comments on:

a. whether it should, as proposed by Telesat, issue flexible licences in the 3700-3900 MHz band using the same conditions of licence as those contained in annex H of the 3500 MHz Framework, noting that some conditions may need to be adjusted to reflect the differences in the two bands and the decisions resulting from this consultation process

b. whether it should issue a single Tier 1 flexible use licence as proposed by Telesat or align with the 3500 MHz band and issue Tier 4 licences

c. what deployment conditions should apply to these licences including Telesat's proposal that the deployment requirements would only come into force after the Minister approves a transfer

d. any additional conditions of licence that should apply given the nature of the proposal

71 Broadly, the conditions of licence associated with the Telesat licences should be the same as those associated with other adjacent bands.

72 The tier size of the licence issued to Telesat is not of importance, since licenses on the secondary market can be subdivided anyway.

Q57 In its proposal, Telesat indicates that it takes no position on ISED imposing a pro-competitive measure such as a spectrum cap or set-aside on the 3700-3900 MHz licences. ISED would review any request for transfer in accordance with provisions related to commercial mobile spectrum through section 5.6 of CPC-2-1-23, Licensing Procedure for Spectrum Licences for Terrestrial Services. However, ISED would also consider the competitive implications on the 3500 MHz and 3800 MHz bands and consider pro-competitive measures in accordance with the Framework for Spectrum Auctions in Canada. As such, ISED is seeking comments on: a. the need for a pro-competitive measure (e.g. spectrum cap or set-aside) b. the type of competitive measure that should be applied c. the amount of spectrum that should be considered under any such competitive measure

73 Competitive measures are necessary if Canadians are to benefit from consumer choice and competitive pricing. Competitive measures should also be put in place to support operators who serve rural Canadians.

74 Spectrum set-asides and spectrum caps are effective measures. If the Telesat proposal is adopted, the 200 MHz of flexible-use spectrum allocated to Telesat must be considered “open” spectrum that is subject to spectrum caps. A significant portion of the remaining spectrum must be set aside for non-NMSP companies.

75 Spectrum caps should be applied across the entire 3450-4200 MHz band. While a spectrum cap has not been applied in the 3450-3650 MHz band, a cap of 150 MHz should be in place across the 3450-4200 MHz band.

76 In order to ensure that rural Canadians benefit from spectrum, it may be necessary to implement different policy measures for rural and urban areas. It is appropriate, for example, to allocate more spectrum to WBS open licensing in rural Canada than in urban Canada.

77 The BCBA thanks ISED for the opportunity to provide these comments.

Kind regards,

Bob Allen
President
BC Broadband Association